Patent claims

1. A roadside control device (1) for checking the correct operation of a toll apparatus (11) which is installed in a motor vehicle (10) passing the control device (1) and exhibiting an identifying license plate (6), the toll apparatus (11) performing a satellite-supported electronic toll deduction and being equipped with the following facilities:

a) a communication device (2) for the wireless exchange of information between the control device (1) and the toll apparatus (11) in the passing vehicle (10),

b) a classification device (3) for allocating the passing vehicle (10) to a predetermined vehicle class,

c) a trigger device (4) for the accurately timed activation of the devices (2, 3, 5, 7) of the control device (1),

d) an evaluating device (5) for a plausibility check of the data supplied by the communication device (2) and the classification device (3) from the and on the passing vehicle (10), and

e) a recording device (7) for recording the license plate (6) of the passing vehicle (10) in the case of an unsuccessful exchange of information of the communication device (2) with the toll apparatus (11) of the passing vehicle (10) or in the case of a negative result of the plausibility check of the evaluating device (5).

2. The control device (1) as claimed in claim 1, characterized in that the communication device (2) is constructed as a dedicated short-range communication (DSRC) device, especially as a radio device for the frequency range from 2.4 to 5.8 GHz.

3. The control device (1) as claimed in claim 1, characterized in that the communication device (2) is constructed as terminal for a cellular network (CN) or data radio network, especially in accordance with the GSM standard or for the Mobitex system.

4. The control device (1) as claimed in one of claims 1 to 3, characterized in that the communication device (2) is set up for conducting the dialog with the motor vehicle (10) in encrypted form.

5. The control device (1) as claimed in one of claims 1 to 4, characterized in the classification device (3) exhibits a sensor system which operates in accordance with an acoustic or optical measuring principle.

6. The control device (1) as claimed in claim 5, characterized in that the sensor system of the classification device (3) exhibits an electronic image sensor.

7. The control device (1) as claimed in claim 6, characterized in that the classification device (3) operates in accordance with the principle of optical correlation.

8. The control device (1) as claimed in one of claims 1 to 7, characterized in that the trigger device (4) exhibits an image sensor followed by image processing or a radar sensor or a laser sensor.

9. The control device (1) as claimed in one of claims 1 to 8, characterized in that the evaluating device (5) is set up for comparing the vehicle class transmitted by the toll apparatus (11) of the motor vehicle (10) via the communication device (2) with the vehicle class determined by the classification device (3).

10. The control device (1) as claimed in one of claims 1 to 9, characterized in that the recording device (7) exhibits an electronic camera.

11. The control device (1) as claimed in claim 10, characterized in that the electronic camera of the recording device (7) is physically identical to an electronic camera which forms the sensor system of the classification device (3).

12. The control device (1) as claimed in one of claims 1 to 11, characterized in that the control device (1) comprises a receiver for the satellite navigation system (12) used by the toll apparatus (11) and the evaluating device (5) is set up for comparing data determined by itself with the data of the satellite navigation system (12) interrogated from the toll apparatus (11), which data can be conducted to the evaluating device (5) via the communication device (2).

13. The control device (1) as claimed in one of claims 1 to 12, characterized in that the control device (1) comprises a radio device (9), especially a data radio device via which the recording of the license plate (6) of the motor vehicle (10) can be transmitted to a control center in the case of improper operation of the toll apparatus (11) found by the evaluating device (5).

14. The control device (1) as claimed in claim 13, characterized in that the control device (1) comprises a data

compression device for transmitting data to the control center in compressed form.

15. The control device (1) as claimed in one of claims 1 to 14, characterized in that the control device (1) is mounted on a mast or on a bridge construction which extends over the road on which the motor vehicle (10) is driving.

16. The control device (1) as claimed in one of claims 1 to 14, characterized in that the control device (10) is arranged in a vehicle parked next to the road on which the motor vehicle (10) is driving.

17. The use of a control device as claimed in one of claims 1 to 16 for detecting the correctness of the operation of a satellite-supported electronic toll apparatus in a vehicle and for securing evidence in the case of improper operation of the toll apparatus.